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ABSTRACT

To measure and report on the extent and quality of students' understanding of geography, the National Geographic Society initiated and provided support for a national assessment of students 17 years old and in the 12th grade. Since 1969, the Nation's Report Card, the National Assessment of Educational Progress (NAEP), has been responsible for collecting information about the educational achievement of United States youth in a variety of subject areas including reading, mathematics, writing, science, music, art, career and occupational development, social studies, literature, computer competence, and recently, U.S. history and civics. The results of the 1988 geography assessment, the first in NAEP's 20-year history, serves the interests of geographers, educators, policymakers, and parents across the country. Chapter 1, "Overview of the Objectives," defines geography in the curriculum and provides a framework for the geography objectives. In Chapter 2, "The Geography Objectives," the following learning outcomes are explored: (1) geographic skills and tools; (2) geographic knowledge and concepts (content) including physical geography and cultural geography; and (3) geographic inquiry including knowing and understanding and applying. A "Distribution of Assessment Items" is included to show the approximate percentage distribution of assessment questions in terms of their classification within the geography framework's main categories of geographic skills and content and geographic inquiry. A list of "Participants in the Development Process" also is provided. (CB)

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GEOGRAPHY OBJECTIVES

1988 ASSESSMENT

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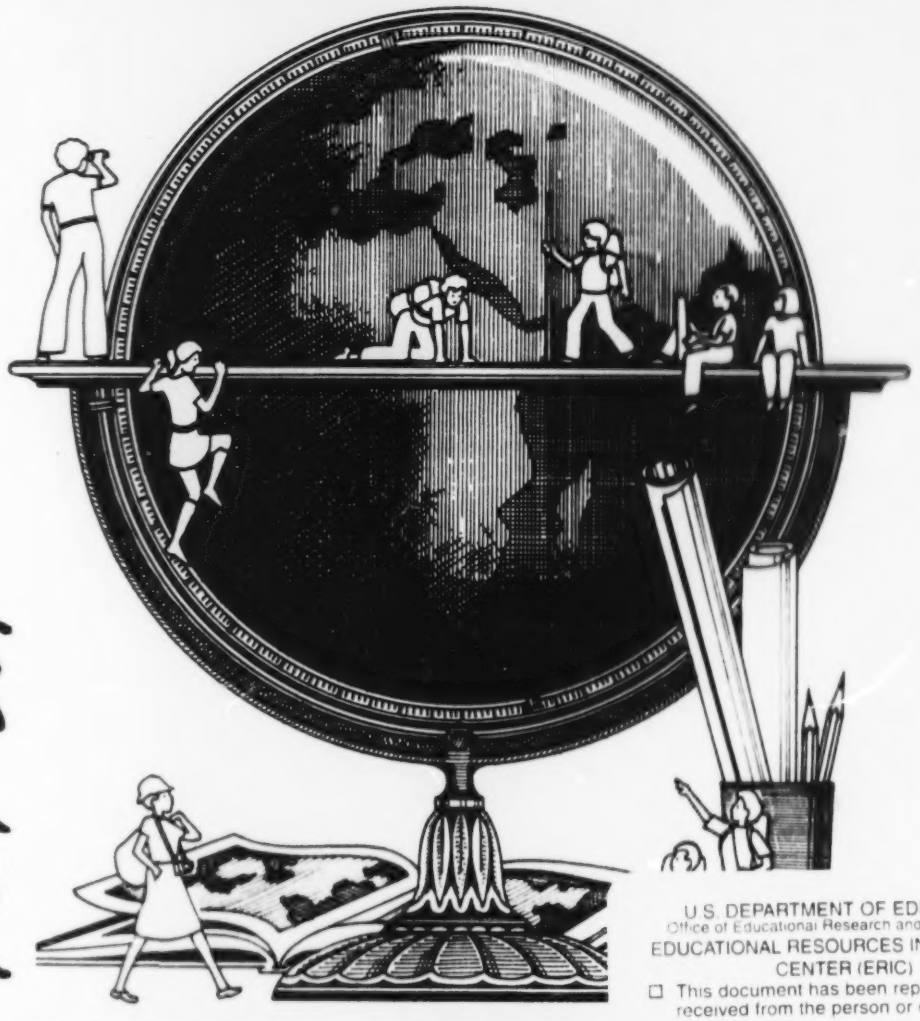

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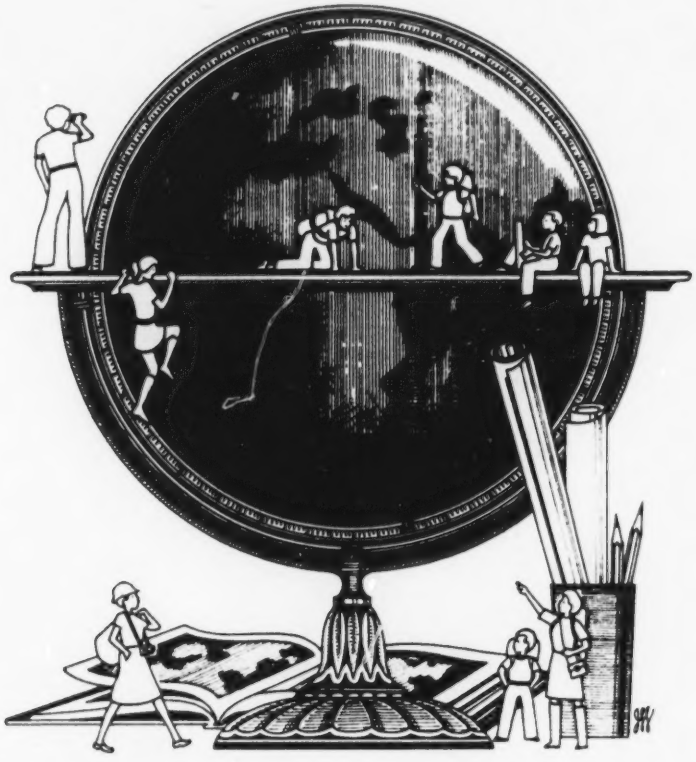

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Introduction

To measure and report on the extent and quality of students' understanding of geography, the National Geographic Society initiated and is providing support for a national assessment of students 17 years old and in the twelfth grade. Since 1969, the Nation's Report Card, the National Assessment of Educational Progress (NAEP), has been responsible for collecting information about the educational achievement of our nation's youth in a variety of subject areas. These areas have included reading, mathematics, writing, science, music, art, career and occupational development, social studies, literature, computer competence, and very recently, U.S. history and civics. The results of the 1988 geography assessment, the first in NAEP's 20-year history, will serve the interests of geographers, educators, policymakers, and parents across the country.

The Development Process

To respond to the many points of view, concerns, and priorities of those committed to student learning of geography, NAEP used a broad consensus process to develop the 1988 assessment of geography. Those involved in the process included university professors, classroom teachers, history and social science researchers, school administrators, and curriculum specialists, as well as concerned parents and lay persons.

As with other NAEP assessments, a Learning Area Committee (LAC) was convened to develop an initial

draft of geography objectives to be measured. These draft objectives were then reviewed by external consultants representing various constituencies and revised as necessary. The LAC remained involved throughout the review and revision process.

The final objectives presented here do not necessarily reflect the views of every individual who participated in the development and review process, but are rather a consensus of the opinions and priorities that emerged from the deliberations of those involved. Although they define areas pertinent to the teaching of geography as well as to the development of questions to assess students' geographic understanding, the objectives are not intended as a complete or definitive specification of curriculum topics. Rather, they provide an overview of learning outcomes.

Because of time constraints during the assessment administration, NAEP was unable to include questions on every topic area or example specified in the objectives. However, the final selection of exercises for the assessment involved careful consideration of the following requirements:

- ★the need to provide exercises across a wide range of difficulty;
- ★the need to vary the question format; and
- ★the need to meet the distribution percentage specifications designated by the LAC.

Chapter one

Overview of the Objectives

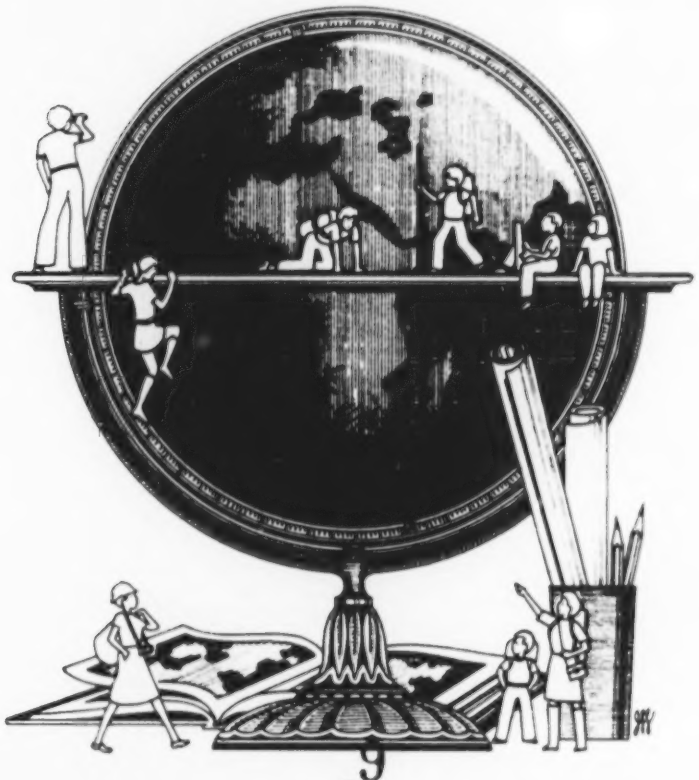
Geography in the Curriculum

The extent to which students understand geography affects their ability to comprehend global relationships, preserve the world's valuable natural resources, and foster peaceful habitation of the earth. An understanding of geography is also critical to the successful study of related disciplines, including history, sociology, and other social sciences, as well as geology, environmental science, and ecology.

In recent years, human needs, problems, and interests have become increasingly complex. Innovations in communications and transportation have altered perceptions of traditional geographic boundaries and enabled nations to enter into more varied political, social, and economic relationships. As Americans attend to local, state, national, and international debates about key interests and concerns, they need to be well informed and be able to discern special interests, as well as recognize the underlying perspectives that align people on different sides of a debate. Knowing about the relationships between places and politics, the characteristics of different cultures, and the nature of economic and resource demands can help the members of society to better understand the interdependence of various parts of the world and to make informed decisions.

As part of their geographic education, students need to know such concepts as location and place. Geographers distinguish between the two terms, using location to refer to absolute or relative position on the earth, and place to refer to the demarcation of an area by certain distinguishing characteristics, either physical or human. These concepts can then be used to achieve a better understanding of the complex relationships among various locations and places around the world.

Students should also develop an understanding of the interactions between people and their environment, the movement of peoples and goods across national boundaries, and the evolution of physical and cultural regions. An understanding of these vital aspects of geography provides a context for making educated decisions on matters that touch human lives and communities.



For example, today's students will be responsible for making important decisions concerning the development and uses of various forms of energy, the discharge and elimination of pollutants in air and water, the optimal use of natural resources, and the management of available land (e.g., the zoning of residential areas). A working knowledge of geography informs students of the context in which these decisions are made and the implications they carry.

A Framework for the Geography Objectives

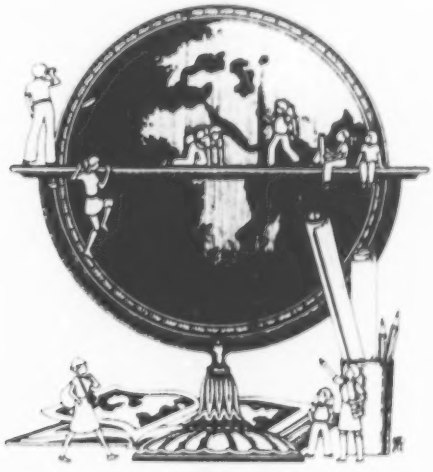
The framework for what twelfth-grade students and 17-year-olds should understand in geography has the following dimensions:

- ★**Geographic Skills and Tools**, which includes using maps, charts, and globes;
- ★**Geographic Knowledge and Concepts (Content)**, which includes understanding the areas of Physical and Cultural Geography; and
- ★**Geographic Inquiry**, including the cognitive application of skills, knowledge, and understanding to new situations.

For analytic purposes, these dimensions are discussed separately in this booklet. However, it is assumed that the three areas overlap and that their synergy forms the core of a student's geographic understanding. The separate discussion is used to highlight the importance of tools particular to geographic study and to stress the skills that should be learned in conjunction with the study of content areas.

For example, the domain of Geographic Skills and Tools is discussed independently of the domains of Physical and Cultural Geography—an artificial distinction, given that a variety of map and resource skills is vital to a student's understanding of both content domains. Similarly, the separate treatment of Physical and Cultural Geography emphasizes that not only physical phenomena, but also human, political, and economic factors are important to geographic study. Finally, the independent discussion on Geographic Inquiry highlights the ability to apply skills and understanding to investigate particular aspects of physical and cultural relationships.

Together, the three dimensions—Geographic Skills and Tools, Geographic Knowledge and Concepts (Content), and Geographic Inquiry—offer a framework for defining objectives in geography education and for developing exercises to assess students' geographic understanding at age 17/grade 12. Curriculum developers may also find the framework useful in examining their own priorities in instruction. A broader K-12 perspective on curriculum is offered in the *Guidelines for Geographic Education* (1984), prepared by the Joint Committee on Geographic Education of the National Council for Geographic Education and the Association of American Geographers.



Chapter two

The Geography Objectives

The Learning Area Committee did not intend that the following objectives be considered complete or definitive or to imply that any curriculum should include all specified topics. However, the included areas were deemed central to geography instruction and were designed to guide the development of questions for the assessment. A table containing the approximate percentage distribution of questions can be found at the end of Chapter Two.

GEOGRAPHIC SKILLS AND TOOLS

This domain encompasses the skills and tools essential to the study of geography, ranging in sophistication from basic map-reading abilities (e.g., understanding direction, symbols, scale, and location) to recognizing the purposes of different symbolic representations and interpreting thematic maps, graphs, and photographs. Maps and globes are fundamental methods of communicating complex social and physical data, and are considered primary geography tools.

The concept of region is also an important organizing tool in geography. Geographers define regions in many different ways; a region may be demarcated by physical features, such as grasslands and mountain ranges, or by cultural features, such as language,

political system, or religion. However defined, the region is a basic unit of study for all domains of geography, and is often used as the organizational framework for high school geography courses. Students should be able to:

a) Recognize and interpret map and globe symbols (e.g., direction and orientation).

b) Use scales to measure distance and area.

c) Use coordinates of latitude and longitude to determine absolute location.

d) Determine and explain relative location (e.g., direction, accessibility, and landmarks).

e) Understand that any flat map is a distortion of a round surface and that different projections serve different purposes.

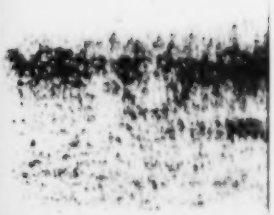
f) Recognize and interpret thematic maps (e.g., cartograms or dot maps of topography, population, or commodities).

g) Detect patterns and determine relationships across maps.

h) Read and interpret graphs (e.g., population pyramids and climagraphs) and charts.

i) Recognize that the earth is divided into northern and southern hemispheres by the equator.

j) Understand that regions provide manageable spatial units for geographic analysis.



GEOGRAPHIC KNOWLEDGE AND CONCEPTS (Content)

Physical Geography

Within the study of geography, the subdiscipline of physical geography focuses on the configuration of the earth's surface, including major topographical features, soil, vegetation, and atmospheric changes. When interactions take place among these phenomena, changes occur in the physical environment, often creating a need for different patterns of human adaptation.

Geographers strive to explain the origin and significance of physical landscapes, particularly as they influence human activity. Among the topics used by geographers to more fully explain the physical environment are:

★location, place, and region;

★climatology and meteorology; and

★evolution of the earth's features.

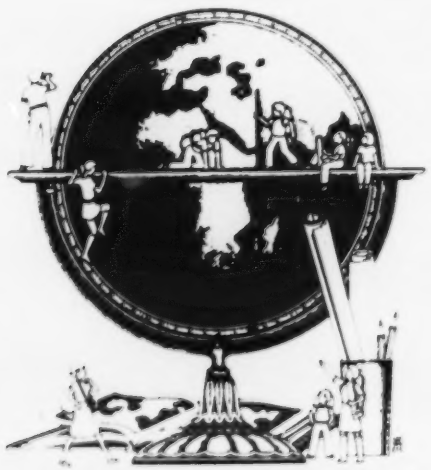
Knowledge of these specific topics provides a basis for better understanding the physical world and its dynamic forces.

Location, Place, and Region

All physical features have **absolute locations** on earth, and these provide useful information in geographic study. For example, researchers who want to study the Mount St. Helens volcano need to know its absolute location as identified by latitude and longitude. Although such knowledge is useful, it is often necessary to have more detailed information in order to develop or convey an adequate description of a particular site.

Relative location is used to provide more referential information. For example, in identifying the relative location of Mount St. Helens, one might say that it is in the southwestern quadrant of Washington State, about 50 miles from the Oregon border, and is one of a series of volcanic peaks in the Cascade Range. Similarly, a description of the relative location of the Tibetan Plateau would likely include the referent of the Himalaya Mountains, and Lake Tanganyika in Africa might be described relative to the location of the Great Rift Valley. Thus, relative location can be used to communicate relevant information by describing a site in its spatial context.

In contrast to locations, **places** may be characterized by physical and cultural features, such as climate, weather, geology, and patterns of settlement. Places across the earth are interconnected by virtue of their physical and cultural features. Knowing how these features are related helps to account for spatial variations and interactions within and between places. For example, knowing that Mount St. Helens is sited along a chain of active volcanoes contributes to our understanding of why this particular volcano erupted where it did and the consequences of this activity.



The concept of **region** was developed by geographers to identify a common set of features of an area—human or physical—that distinguish it from other areas. In physical geography, regions are defined by the interaction of physical phenomena in an area. The tropical rain forest of the Amazon basin of Brazil constitutes a physical region because of the uniformity in climate, soils, and vegetation within that area. The Rocky Mountains form a region based on the characteristics of common earth-building processes. Knowledge of the shared features of an area allows the geographer to study and analyze sections of the earth's surface and to make comparisons across different areas.

Students should be able to identify and locate:

a) Major continental land masses and major ocean basins.

b) Selected rivers, lakes, gulfs, and seas (e.g., Nile, Amazon, Mississippi, Yangtze, the Ganges, Great Lakes, Gulf of Mexico, Persian Gulf, and the Mediterranean).

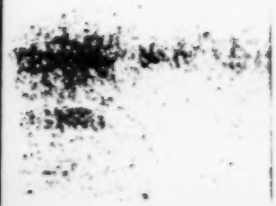
c) Major land forms (e.g., Great Plains, Rockies, Alps, Andes, and Himalayas).

d) Major climatic regions and ecosystems (e.g., tropical rain forests, Mediterranean region, desert, and polar).

e) Deposits of natural resources on maps and charts (e.g., oil, coal, water, iron ore, uranium, fisheries, forests, and soils).

Climatology and Meteorology

Studying climatology and meteorology, and their reciprocal relationships with environmental features,



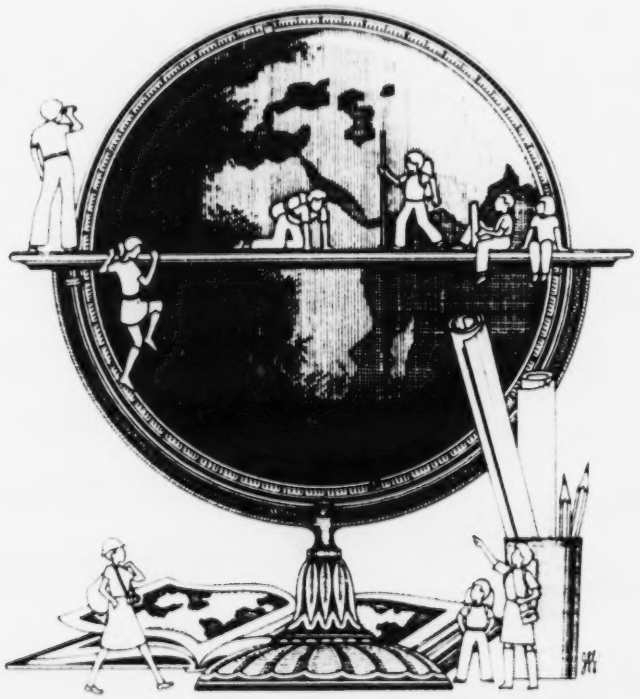
provides another basis for understanding physical geography. For example, the burning of fossil fuels and the destruction of tropical rain forests contribute to an increase in the carbon dioxide concentration in the atmosphere which, in turn, contributes to an increase in the earth's average temperature (known as the greenhouse effect). This climatic change may also initiate or exacerbate other environmental consequences.

Students should be able to understand:

a) How earth/sun relationships affect climate (e.g., heating, wind, and ocean currents) and time (e.g., days and seasons), including differential effects for the hemispheres.

b) The reciprocal relationships among climate, soils, and vegetation.

c) Various atmospheric pressure conditions as they relate to local and global patterns of wind and precipitation.



Evolution of Land-Form Features of the Earth's Surface

Students should also be familiar with the basic tectonic and erosion processes that influence the **evolution of the earth's features**. For example, mountains may be formed by the movement of plates, valleys carved out by erosion, and islands developed through vulcanism or by volcanic activity. An understanding of these and other major processes is essential to a grasp of the evolution and transformation of the earth's topographical features.

Students should be able to understand:

a) Basic tectonic processes (e.g., folding, faulting, warping, vulcanism, and plate rearrangement).

b) Basic erosion processes (e.g., weathering, degradation, and aggradation).

Cultural Geography

The subdiscipline of cultural geography seeks to explain the origin, spatial distribution, and importance of human settlements and activities. It emphasizes the ways in which society has changed the natural landscape or environment into modified or cultural landscapes. For example, since the beginning of the human race on earth, people have created shelters, clothing, tools, weapons, and medicines that have allowed them to adapt to or transform their existing environments.

Cultural geography directs attention to the origin, distribution, and influence of those elements of culture — such as economics, technology, aesthetics, and religion — that give expression to a given landscape. The goal of this subdiscipline is to make sense of the ways in which human systems have altered, and been influenced by, various environments or landscapes.

Four major topics are used by geographers to organize and structure their explanation of the human role in landscape manipulation. These topics include:

★location, place, and region;

★human impact on the environment;

★influence of environment on human activity; and

★spatial interaction.

Location, Place, and Region

As with physical geography, the concepts of **location**, **place**, and **region** are critical to the study of cultural geography. For example, the ability to identify major American cities, states, and regions; foreign countries; prominent cultural regions; areas of low and high population density; and areas with different patterns of economic development should help to promote an understanding of the basics in geography and in other subject areas, such as history and economics. Students should be able to identify:

a) The 50 states and major cities in the United States (e.g., Washington, D.C.; New York; Boston; Chicago; Los Angeles; and Dallas).

b) Major countries (e.g., Canada, Mexico, the Soviet Union, China, India, Nigeria, Peru, and France) and foreign cities (e.g., London, Tokyo, Beijing, Moscow, Cairo, Jerusalem, Berlin, Hong Kong, Rio de Janeiro, and Toronto).

c) Attributes of major cultural regions, including continents and subcontinents (e.g., Latin America, East Asia, Africa south of the Sahara, South Asia, the Middle East and North Africa, Western Europe, and Oceania).

d) Areas of high and low population densities.

e) Areas of high and low economic development.

Human Impact on the Environment

Understanding the **human impact on the environment** involves learning about the physical and social forces that precede environmental change. It includes understanding the causes and effects of population growth and migration and the ways in which these variables influence the appearance of the landscape. Among the areas of primary interest are the environmental changes generated by agriculture and the growth of cities, resource extraction, and manufacturing, as well as the relevance of these environmental effects to international and domestic policies and relationships.

Understanding the benefits, costs, and risks of environmental modification is also particularly important as the world becomes more densely populated and urbanized. Most environmental modifications have resulted in countless benefits for humans, such as expanded supplies of food and water. But sometimes human impact on environmental systems results in undesirable consequences, such as increased pollution, declines in land productivity, and extensive erosion. Excessive amounts of acid rain, the destruction of the ozone layer, and deforestation in the tropics are examples of recent adverse effects. Students should have an understanding of both the benefits and costs of human activity in order to participate intelligently in future decisions concerning environmental modification.

Finally, students need to be aware of the relationship between cultural perceptions and the consequences of environmental change, because these have a bearing on such issues as preservation of the wilderness, the development and uses of different sources of energy, the management of urban sprawl, uses of land, and the preservation of other cultures and patterns of life.

Students should be able to understand:

a) The causes and effects of changes in population structure (e.g., improvement in health care, redefinition of women's roles and family structure, cultural values, government and religious policies, and economics).

b) The effects of agricultural activity on the shape, appearance, and quality of the landscape (e.g., deforestation, terracing, grazing, irrigation, erosion, and chemical runoff of fertilizers, insecticides, and herbicides).

c) The effects of cities on the environment (e.g., climate, air and water quality, loss of farm land, solid waste and sewage disposal, flood control, and residential amenities).

d) The effects of resource extraction and manufacturing on the environment (e.g., air and water pollution, and toxic waste).

e) The economic and social costs of environmental change, as well as the benefits.

f) The relationships between cultural perceptions and environmental change (e.g., attitudes toward wilderness, land use, convenience of highways, nuclear power, and coal, and oil-fired generating plants).

Influence of Environment on Human Activity

People of different cultures must adapt to varying environmental conditions (e.g., climatic extremes and physical barriers to migration). Within this subdiscipline of cultural geography, students should be aware of the ways in which various cultures have used environmental resources available in their areas, and the influence of these patterns of use on economic activity and population.
Students should be able to understand:

a) The influence of climate, soil, vegetation, and resources on population distributions (e.g., settlement patterns) and economic activity, and the concepts of relative and absolute location.

b) The changing influence of environmental features over time as a result of physical processes (e.g., vulcanism and climate), past human efforts (e.g., railroads and canals), and recent technological innovations (e.g., automobiles and airplanes).

Spatial Interactions

Because geography is so profoundly concerned with the interaction of people and places, the concept of **spatial interaction** is central to the study of cultural geography. It includes the forces that promote or inhibit human migration, as well as the flow of commodities and the movement of resources. These

forces have a strong influence on the location of cities and the patterns of settlement within cities, creating predictable arrangements of population and land use.

Students should be aware that the interactions among people, and between people and places, create networks that facilitate the flow of cultural traditions, ideas, and innovations within society; and that physical territories shape these human interactions, influencing patterns of landscape use, politics, and worldwide economic development.
Students should be able to understand:

a) The factors that promote and inhibit human migration (e.g., wars and calamities; environmental features; political, social, and economic factors; life-cycle moves; and shrinking world or "global village" perception).

b) The factors that facilitate commodity flow (e.g., economic, social, and political structures; resource availability and needs).

c) The distribution of people in cities and the reasons and consequences of urban land-use patterns (e.g., neighborhoods, ghettos, central business districts, urban fringes, manufacturing areas, retail-mall developments, urban renewal, crime and deterioration, cultural centers, residential amenities, and use of vertical space).

d) The patterns of suburban development and associated commuting patterns (e.g., automobiles, tract developments, freeways, and public transportation).

e) The factors that promote and inhibit the dissemination, adoption and rejection of new ideas, innovations, and products and the consequences of cultural diffusion (e.g., fads, changing communication technologies, consumer preferences, socio-

economic status, perceptions, values, religion, and ideology).

f) The causes of economic development and their differential expressions across the globe (e.g., population density and composition, and available natural resources).

g) The relationships between politics and territory (e.g., core areas and peripheries, buffer zones, aggression, colonization, and revolution).

GEOGRAPHIC INQUIRY

The last dimension of the framework, **Geographic Inquiry**, refers to the broad categories of thinking skills that students use when learning about geography: knowing, understanding, and applying. These sets of activities enable students to integrate, use, and expand their existing knowledge of geographic concepts; accordingly, the dimension of geographic inquiry cuts across the total set of assessment questions.

The geographic inquiry process generally follows a logical sequence: first, locating places or sites and accounting for their physical and cultural characteristics; and second, exploring the relationships that develop as people respond to and shape their physical and cultural environments. This exploration permits comparisons and contrasts and, ultimately, a deeper understanding of various regions of the world and their different physical and human features and patterns.[1]

Using the skills of geographic inquiry, students' knowledge and understanding of geography as a distinct subject area become more extensive and sophisticated. For example, the skills of reading,

[1] Joint Committee on Geographic Education of the National Council for Geographic Education and the Association of American Geographers (1984) *Guidelines for Geographic Education*. Washington, DC.

interpreting, analyzing, and constructing maps are essential components of inquiry-based learning, allowing students to understand the location of sites and ascertain their relevant cultural and physical features.

Knowing

Knowing refers to the student's geography knowledge base, which includes awareness, recognition, and recall of specific locations, topographical features, regions and areas; and use of maps, graphics, and other visuals. This knowledge base also includes concepts and principles pertaining to physical and cultural geography.

Understanding and Applying

Understanding and **applying** refer to the student's ability to integrate geography skills, facts, and concepts to make inferences and interpretations about geographical issues or problems. These issues or problems may require hypothesizing as to why certain people migrated to specific geographical regions, or why particular uses of land areas adversely affected the environment.

Specifically, understanding refers to how well the student organizes and integrates his or her geography knowledge and assimilates new information into this knowledge base through interpretation and inference. For example, a student should be capable of examining a map and making inferences based on the information presented. The applying dimension is concerned with how well the student is able to use what he or she knows about geography to resolve geographic questions or problems. The applications of geographic knowledge depend upon how a student analyzes and evaluates available information in the course of reaching a conclusion.

Distribution of Assessment Items

The Learning Area Committee for the 1988 geography assessment created the two-part framework described in Chapters One and Two — encompassing **Geographic Skills and Content**, and **Geographic Inquiry**—to guide the development and classification of assessment questions. Each question was classified in **both** categories of the framework, to clarify distinctions between the skills and content embedded in a question, and the types of inquiry required. The approximate percentage distribution of questions in each of these categories is provided below.

Percentage of Assessment Questions

Geographic Skills and Content	**Sub-total**	**Total**
Geographic Skills and Tools		22
Geographic Knowledge and Concepts		
Physical Geography		30
Location, Place, and Region	12	
Climatology and Meteorology	12	
Evolution of Land Form Features	6	
Cultural Geography		48
Location, Place, and Region	14	
Human Impact on the Environment	14	
Influence on Environment on Human Activity	4	
Spatial Interaction	16	
		TOTAL = **100**
Geographic Inquiry		
Knowing		50
Understanding and Applying		50
		TOTAL = **100**

Participants in the development process

The Nation's Report Card appreciates the efforts of all of the individuals who contributed to the development of the 1988 Geography Objectives. Many educators, including university professors, history and social science researchers, classroom teachers, school administrators, and curriculum specialists, as well as concerned parents and lay persons, participated in developing and reviewing successive drafts. These objectives could not have been developed without their substantial involvement.

Special thanks are due to the members of the Learning Area Committee who developed the framework and specifications for the assessment, were responsive to the reviews, and spent long hours reviewing and revising objectives and exercises.

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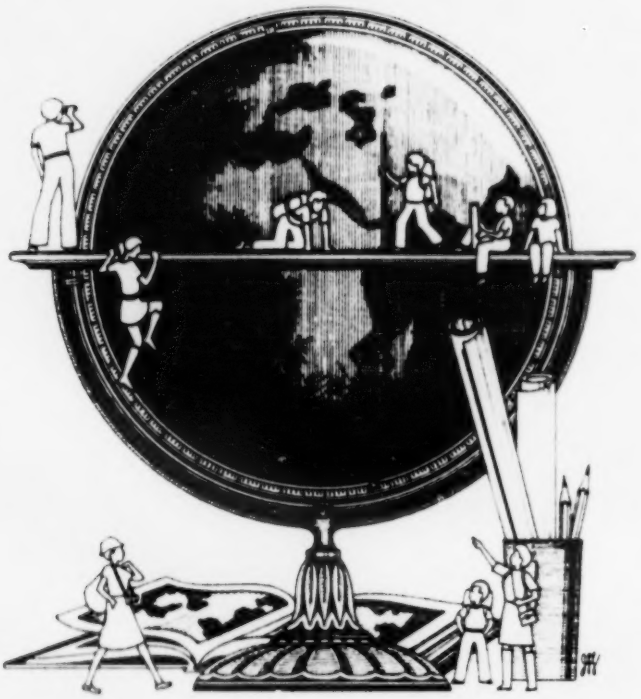

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